What we claim is:

1. An automatic gain control circuit comprising:

a first error calculation circuit which calculates an amount of first error

5   between an input signal and a first reference, and outputs a first signal

corresponding to said first error;

a second error calculation circuit which calculates an amount of second

error between an input signal and a second reference, and outputs a second signal

corresponding to said second error;

10   a determination circuit connected to said first error calculation circuit and

said second error calculation circuit, determines a value of an output signal from

said first error calculation circuit, and selects one of said first and second signals

based on said determination; and

an integrator integrates an output signal from said determination circuit.

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2. The automatic gain control circuit according to Claim 1, further

comprising:

a first multiplier and a second multiplier connected to an output port of

said first error calculation circuit and said second error calculation circuit

respectively;

wherein said determination circuit outputs, based on said determination of

5   said output signal from said first error calculation circuit, a signal of an amount of

1 to one of said first or second multiplier, and a signal of an amount of 0 to said

other one of said first or second multiplier.

3. The automatic gain control circuit according to Claim 1, further

10   comprising:

a first AND circuit and a second AND circuit connected to an output port

of said first error calculation circuit and said second error calculation circuit

respectively;

wherein said determination circuit outputs, based on said determination of

15   said output signal from said first error calculation circuit, a signal of an amount of

1 to one of said first or second AND circuit, and a signal of an amount of 0 to said

other one of said first or second AND circuit.

4. A data communications device comprising:

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an equalizer for equalizing an input signal from a communication line;

an automatic gain controller, connected to said equalizer, to control a level

of an input signal to be stabilized in a constant value;

wherein, said automatic gain controller comprising:

5   a first error calculation circuit for calculating a first error value between an

input signal and a first reference signal;

a second error calculation circuit for calculating a second error value

between an input signal and a second reference signal;

an integrating circuit connected to said first or second error calculation

10   circuits, for integrating a difference between a level of an input signal and a

predetermined value; and

a determination module, connected to said first error calculation circuit,

said second error calculation circuit and said integrating circuit, for determining

whether an output signal of said integrating circuit is larger than said

15   predetermined value, and selecting one of said first error calculation circuit and

said second error calculation circuit for an automatic gain control based on said

determination.

5. The data communications device according to Claim 4, wherein:

said first error calculation circuit comprising a squaring circuit for

squaring an input signal; and

a comparator for comparing a difference between said squared signal and

a reference signal.

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6. The data communications device according to Claim 4 or Claim 5,

wherein:

said second error calculation circuit comprising a rectifying circuit for

rectifying an input signal; and

10   a comparator for comparing a difference between said rectified signal and

a reference signal.

7. An automatic gain control circuit comprising:

a first error calculation circuit for calculating a first error amount between

15   a power of an input signal and an average power of an eye pattern;

a second error calculation circuit for calculating a second error amount

between a product of an input signal and a rectifying signal and a product of an

ideal signal and a rectifying signal;

a first integrator for integrating said first error amount;

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a determination module connected to said first error calculation circuit,

said second calculation circuit and said first integrator, for determining whether

said integrated error amount exceeds an average power of an eye pattern, and

output said first error amount when it is determined that said integrated first error

5   amount exceeds said average power of an eye pattern, and output said second

error amount when it is determined that said integrated error amount does not

exceed said average power of an eye pattern; and

a second integrator for integrating an output signal from said

determination module.

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8. An automatic gain control method comprising:

calculating a first error between an input signal and a first reference;

calculating a second error between an input signal and a second reference;

determining a value of said first error;

15   selecting one of said first error and said second error as an output based on

said determination; and

integrating selected output .

9. An automatic gain control method, comprising:

calculating a first error between a power of an input signal and an average power of an eye pattern;

calculating a second error between a product of an input signal and a rectifying signal and a product of an ideal signal and a rectifying signal;

5   integrating said first error;

determining whether said integrated first error exceeds said average power of an eye pattern;

output said first error when said integrated first error exceeds said average power, and output said second error when said integrated first error does not

10   exceeds said average power; and

integrating said output first or second error.